Shilov-type reactions

Description of Technology: The functionalization of compounds containing carbon-hydrogen bonds utilizing platinum compounds in Shilov-type reactions is improved by using hydrogen peroxide or selected Pt[IV] compounds as an oxidant. The products of the various processes are useful in many ways, for example as chemical intermediates, solvents, and as monomers for polymers.

Patent Listing:
1.   **US Patent No.** 6,262,280, Issued on July 17, 2001, "Shilov-type reactions"
http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,262,280.PN.&OS=PN/6,262,280&RS=PN/6,262,280

Market Potential: The conversion of carbon-hydrogen bonds, especially unactivated carbon-hydrogen bonds, into other functional groups in organic compounds has always been a difficult challenge for chemists, and few methods for doing this which are selective and/or well controlled have been developed. One of these methods is the so-called Shilov-type reaction, which classically involves the combined use of a Pt[II] compound such as PtCl.sub.2 and a Pt[IV] compound, almost always the PtCl.sub.6.sup.-2 anion, especially to create oxygen functional compounds. However, this reaction has two major disadvantages, namely it is not often as selective as desired, for example organic chlorine compounds are often generated, and the expensive Pt[IV] compound must be used in stoichiometric, not catalytic, quantities. Therefore, methods for overcoming one or both of these problems would enhance the usefulness of this reaction.

What are needed are improved Shilov-type processes that do not have the disadvantages and/or deficiencies inherent in the prior art. The products of the various processes are useful in many ways, for example, as chemical intermediates, solvents, and as monomers for polymers.

Benefits:
- More selective than normal Shilov-reaction
- Can be used in catalytic quantities

Applications:
- Chemical intermediates
- Solvents
- Monomers for polymers